CLAIMS

What is claimed is:

1. A method comprising:

receiving a serial data stream;

sampling each data unit in the data stream N times to obtain multiple data samples per data unit;

detecting edge transitions between adjacent data samples; and

selecting a data sample representative of the current data unit based on the location of edge transitions over the current and previous data cycles and the location of the ideal data sample to perform data recovery.

2. The method of claim 1 wherein the selected data sample is determined by the edge transition in the previous or current data cycles which is closest to the ideal data sample.

3. The method of claim 1 wherein the N samples per data unit are taken at different locations along the cycle of each data unit.

4. The method of claim 1 wherein the ideal data sample is within the current data unit cycle and N samples from the previously selected data sample.

5. The method of claim 1 wherein selecting the data sample includes,

selecting the data sample to lie in the direction of the mid-point between the detected edge transition and the next expected edge transition and a distance of N-1, N, or N+1 samples from the previously selected data sample, whichever is closest to the mid-point.

6. The method of claim 1 wherein selecting a data sample based on the location of edge transitions over two data cycles includes selecting a data sample based on 2*N consecutive data samples across the current data unit cycle and the previous data unit cycle.

7. The method of claim 1 wherein if no edge transitions are detected the selected data sample is the ideal data sample.

8. The method of claim 1 wherein if only one edge transition is detected, that edge transition determines the next selected data sample.

9. The method of claim 1 wherein if multiple edge transitions are detected and all correspond to the same data sample, then that data sample is selected.

10. The method of claim 1 wherein if multiple data edge transitions are detected and they correspond to different data samples, then the selected data sample is the ideal data sample.

11. The method of claim 1 further comprising:

maintaining a list of the M previous selected data samples, where M is an integer value.

12. The method of claim 1 wherein in selecting the data sample, as between two equally likely data sample locations, the data sample location most recently selected in previous cycles is chosen.

13. An apparatus comprising:

a sampling device to sample each data unit of a serial data stream N times at different points in each data unit, where N is an integer value;

an edge detector coupled to the sampling device to detect edge transitions between consecutive data samples; and

a selection controller coupled to the edge detector to receive the outputs from the edge detector and select a data sample to represent the current data unit according a predefined decision algorithm for data correction employing the current and previous data unit cycles and the ideal current data sample.

14. The apparatus of claim 13 wherein the ideal current data sample is located within the current data unit cycle and N samples from the selected data sample in the previous data unit cycle.

15. The apparatus of claim 13 wherein the value of N is six.

16. The apparatus of claim 13 wherein the selection controller selects the data sample corresponding to the edge transition in the previous or current data cycles which is closest to the ideal current data sample.

17. The apparatus of claim 13 wherein the selection controller selects the data sample to lie in the direction of the mid-point between the detected edge transition and the next expected edge transition and a distance of -1, 0, or +1 samples from the ideal data sample location, whichever is closest to the mid-point.

18. The apparatus of claim 13 wherein if no edge transitions are detected by the edge detector, the selection controller selects the ideal data sample location to obtain the data sample.

19. The apparatus of claim 13 wherein if only one edge transition is detected by the edge detector then the selection

controller selects a sample which lies in the direction of the mid-point between the detected edge transition and the next expected edge transition and a distance of -1, 0, or +1 samples from the ideal data sample location, whichever is closest to the mid-point.

20. The apparatus of claim 13 wherein if multiple edge transitions are detected by the edge detector and all transitions correspond to the same data sample, then the selection controller selects that data sample as the next data sample.

21. The apparatus of claim 13 wherein if multiple data edge transitions are detected by the edge detector and they correspond to different data samples, then the selection controller selects the data sample corresponding to ideal data sample location.

22. The apparatus of claim 13 further comprising:

a storage device to maintaining a list of the M previous selected data samples, where M is an integer value.

23. The apparatus of claim 13 wherein, as between two equally likely data sample locations, the selection controller selects the data sample location most recently selected in previous cycles.

24. A machine-readable medium having one or more instructions to perform data recovery, which when executed by a processor, causes the processor to perform operations comprising:

sampling each data unit in a data stream N times, where N is an integer value, at different locations along the data unit, to obtain multiple data samples per data unit;

detecting edge transitions between adjacent data samples; and

selecting a data sample representative of the current data unit based on the location of edge transitions over the previous and current data cycles and the location of the ideal current data sample to perform data recovery.

25. The machine-readable medium of claim 24 wherein the representative data sample is selected to lie in the direction of the mid-point between the detected edge and the next expected edge and yet is adjacent to, or equal to, the ideal current data sample location within the current data unit cycle.

26. The machine-readable medium of claim 24 wherein if no edge transitions are detected the selected data sample corresponds to the same location as the ideal current data sample.

27. The machine-readable medium of claim 24 wherein if only one edge transition is detected, then that edge transition determines the next selected data sample to be a sample which lies in the direction of the mid-point between the detected edge transition and the next expected edge transition and a distance of -1, 0, or +1 samples from the ideal current data sample location, whichever is closest to the mid-point.

28. The machine-readable medium of claim 24 wherein if multiple edge transitions are detected and all correspond to the same data sample, then that data sample is selected.

29. The machine-readable medium of claim 24 wherein if multiple data edge transitions are detected and they correspond to different edge transitions, then the selected data sample is the same as the ideal current data sample.

30. The machine-readable medium of claim 24 wherein selecting the data sample, as between two equally likely data sample locations, the data sample location most recently selected in previous cycles is chosen.